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ABSTRACT

The American Association of University Women (AAUW) sponsored a national survey research project that polled school aged children to study the interaction of self-esteem and education and career aspirations in adolescent girls and boys in today's society. Three thousand children between grades 4 and 10, in 12 locations nationwide, were surveyed. The survey examined the differences in attitudes between girls' and boys' perceptions of themselves and their futures, measured the changes in attitudes as adolescents grow older, and identified critical processes at work in forming adolescents' attitudes of self-esteem and identity. In addition, the survey looked at the development of adolescents' aspirations--their career choices and expectations, their perceptions of gender roles, and the part that educational setting plays. Finally, the survey examined the relationship of mathematics and science skills to self-esteem and career goals of boys and girls. Among the key findings of the survey was that as girls and boys grow older, both experience a significant loss of self-esteem in a variety of areas; however, the loss is most dramatic and has the most long-lasting effect for girls. A number of graphs depicting the findings of the survey are included. (DB)

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Shortchanging Girls, Shortchanging America

AMERICAN
ASSOCIATION OF
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WOMEN

U.S. DEPARTMENT OF EDUCATION
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A nationwide poll to assess
self esteem, educational experiences,
interest in math and science,
and career aspirations
of girls and boys ages 9-15.

SO 022 114

Commissioned by AAUW
January 1991

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Shortchanging Girls, Shortchanging America

Introduction

The **American Association of University Women** (AAUW), a long time force in women's education, has launched a major initiative to understand the critical changes in attitudes and identity among girls and boys and to apply that understanding to adolescent experience and its effects on life's choices. With **Greenberg-Lake: The Analysis Group**, the AAUW has recently completed a national survey research project to study the interaction of self-esteem and education and career aspirations in adolescent girls and boys in today's society.

The survey, commissioned this autumn, examines the differences in attitudes between girls' and boys' perceptions of themselves and their futures, measures the changes in attitudes as adolescents grow older, and identifies critical processes at work in forming adolescents' attitudes of self-esteem and identity. It then looks at the development of adolescents' aspirations — their career choices and expectations, and their perceptions of gender roles and at the part that the educational setting plays in that. And, finally, the survey examines the relationship of math and science skills to the self-esteem and career goals of the boys and girls who will make up the workforce of the next century.

Adolescence, the period of transition from childhood to adulthood, is a critical time for the development of self-identity. It is one of the stages of a person's life where changes in biology and psychology are dramatic. It is a critical moment of a person's life to make a broad set of choices and decisions. And, finally, it is the time in a person's life when the differences of gender are particularly formative for the adult lives of women and men in our society.

The study included three thousand children between grades four and ten, in twelve locations nationwide. The survey was conducted from September 19 through November 14, 1990. The sample for this study was stratified by region. **Greenberg-Lake** developed clusters of states and took a random selection sample across each strata and cluster proportionate to the number of school-age children in each state last year. Topics of research and the survey language were refined in a preliminary series of focus groups.

Key Findings

The most interesting findings of the survey center on self-esteem. Adolescence is a tough time for both girls and boys. As girls and boys grow older, both experience a significant loss of self-esteem in a variety of areas; however, the loss is most dramatic and has the most long-lasting effect for girls.

This summarizes several important initial findings of the survey about the levels and trends in self-esteem among young people, about the effects of young people's declining sense of self on their actions and abilities, and about institutional influences on their lives. These findings represent the beginning of an understanding of the complex relationship between adolescent self image and careers, the differences in that relationship due to gender, and the impact of math and science on self-esteem and career aspirations.

1. A gender gap on self-esteem increases with age.

The adolescent years, marked by dramatic changes and contradictions, strongly affect the self-esteem of both girls and boys. However, the survey finds dramatic differences in levels and trends in esteem between girls and boys, with more boys than girls entering adolescence with high self-esteem and many more young men than young women leaving adolescence with high self-esteem.

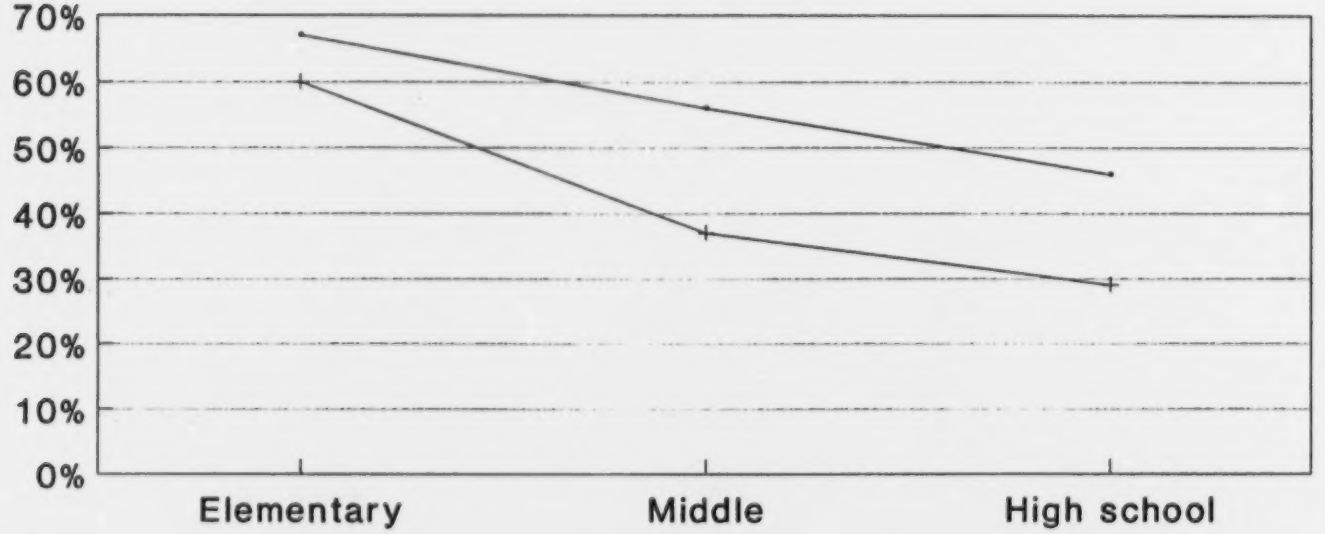
Girls, aged eight and nine, are confident, assertive, and feel authoritative about themselves. They emerge from adolescence with a poor self-image, constrained views of their future and their place in society, and much less confidence about themselves and their abilities. Sixty percent of elementary school girls say they are "happy the way I am", a core measure of personal self-esteem. More boys, 67 percent of those surveyed, also strongly agreed with the statement. Over the next eight years, girls' self-esteem falls 31 percentage points, with only 29 percent of high school girls saying they are happy with themselves. Almost half of the high school boys (46 percent) retain their high self-esteem. By high school, this gender gap increases from 7 points to 17 points.

Graph A shows young women and men experiencing a loss of self-esteem as they grow older, with adolescent women showing a dramatically greater loss. The sharpest drops in self-esteem occur in the years between elementary school and middle school.

The drop in self-esteem during the adolescent years and the accelerating and widening gap in self-esteem between girls and boys is most clearly presented by calculating a "Self-esteem Index" from the five tested measures of basic individual self-esteem: "I like the way I look," "I like most things about myself," "I'm happy the way I am," "Sometimes I don't like myself that much," and "I wish I were somebody else." See **Graph B**.

I'm Happy the Way I Am

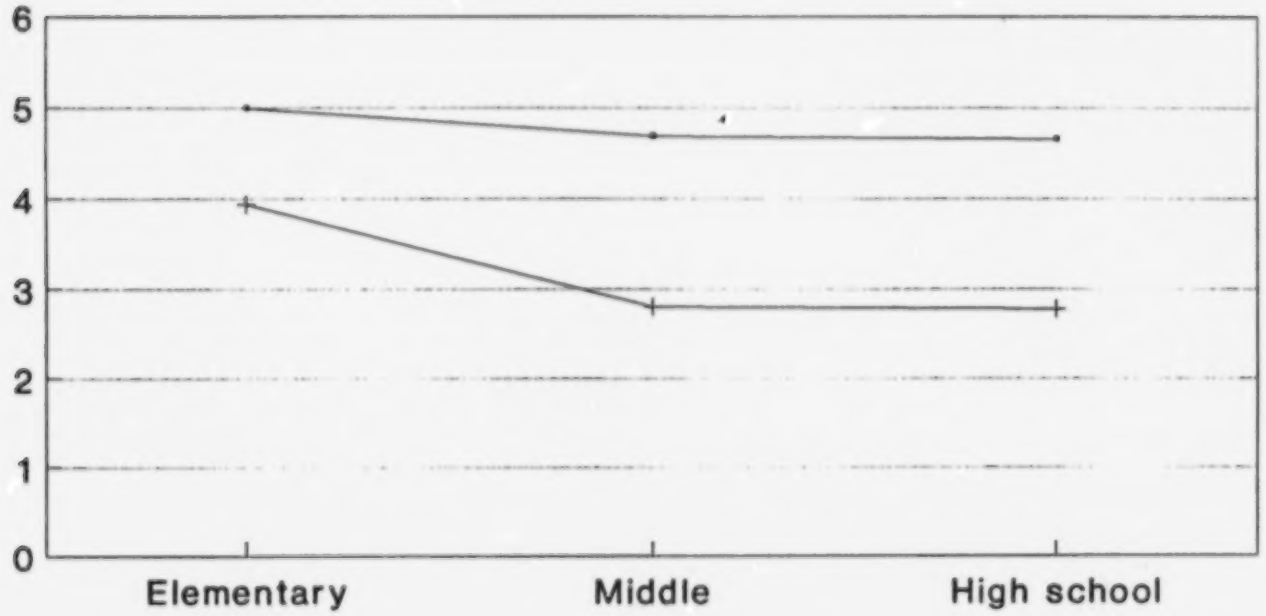
Percent "Always True" by Grade



	Elementary	Middle	High school
Boys	67%	56%	46%
Girls	60%	37%	29%

Graph A

Self-Esteem Index



	Elementary	Middle	High school
Boys	4.99	4.68	4.65
Girls	3.93	2.80	2.77

Graph B

2. Declining self-esteem, a governor on dreams and future actions, more strongly affects girls than it does boys.

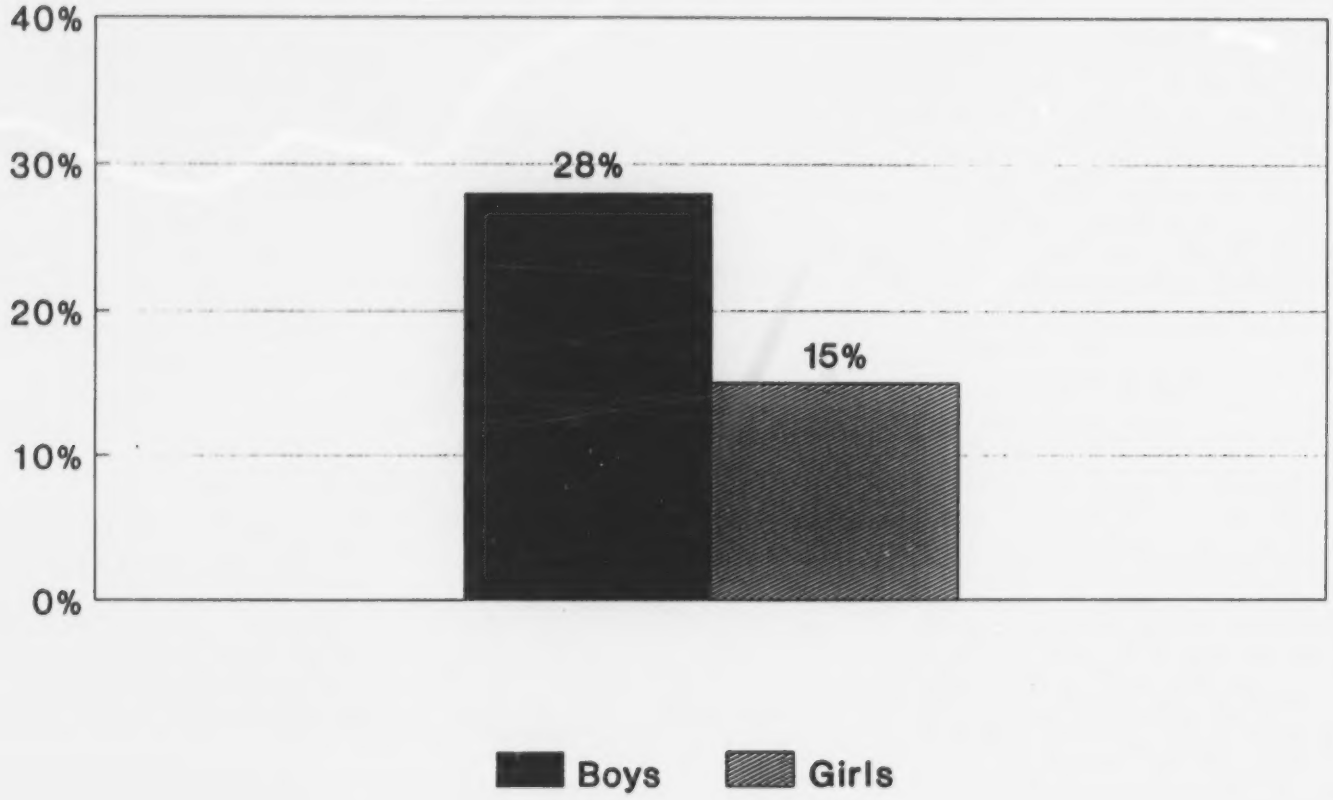
The overall declines in self-esteem during adolescence have their greatest impact on girls as self-esteem turns to action. The survey finds that adolescent girls are more likely than are boys to have their declining sense of themselves inhibit their actions and abilities. This difference accentuates with age.

The biggest difference in self-esteem between girls and boys centers on the subject of "doing things." Boys are much more likely than are girls to feel "pretty good at a lot of things." Almost half the boys say this statement is always true, compared to less than a third of the girls who say it is. Boys' sense of confidence in their ability to "do things" correlates strongly with general self confidence.

Boys also report a greater willingness to speak out. Boys are more likely than are girls to "speak up in class a lot" and, as **Graph C** shows, to "argue with my teachers when I think I'm right."

The gender gap in feelings of confidence toward their abilities grows as adolescent girls and boys get older. As **Graph D** shows, the 10 point difference between elementary school girls and boys becomes a 19 point difference between high school girls and boys.

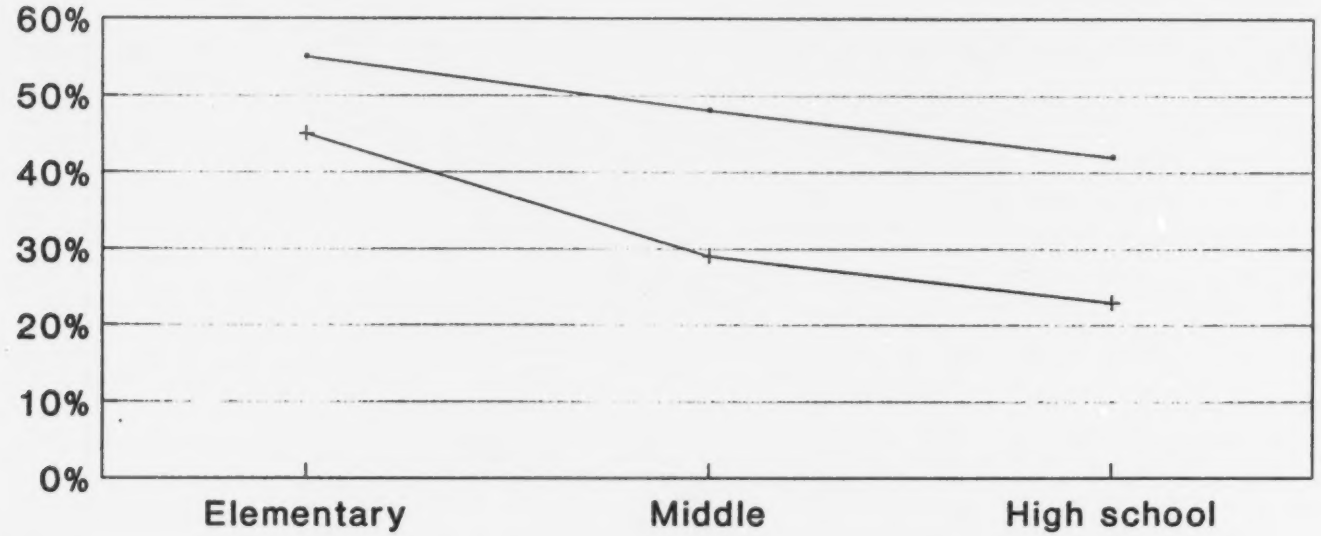
I Argue with My Teachers When I'm Right
Percent "Always True"



Graph C

I'm Good at a Lot of Things

Percent "Always True" by Grade



	Elementary	Middle	High school
Boys	55%	48%	42%
Girls	45%	29%	23%

Graph D

The greater sense of self-esteem among young men is apparent in their greater confidence in their own talents, a point of intersection between feeling and action. Almost twice as many boys as girls refer to their talents as what they like most about themselves. Boys' confidence in their ability in sports, four times as high for adolescent boys as for girls, is the source of much of the difference.

Physical appearance, fundamental to the self-esteem of all young people, is much more important to the self image of young women than of young men. Girls are nearly twice as likely as boys to mention a physical characteristic as the thing they like most about themselves. Physical appearance is most important for girls in middle school, the time of greatest decline in self-esteem.

As girls and boys go through adolescence, both experience traumatic physical changes and their perceptions of those changes are central to patterns of self-esteem. However, the way young women and men see those changes and the degree to which those changes influence self image differ sharply by gender. Boys tend to view the physical changes positively, as getting bigger and stronger. Girls believe their changes lead in a negative direction, reinforcing their declining self-esteem and gender stereotypes. Further, boys' greater confidence in their talents, in their ability to do things, cushions their uneasiness about changes in their appearance; whereas society tells girls more strongly that their worth is dependent on their appearance.

Finally, self-esteem is critically related to young people's dreams and successes. The higher self-esteem of young men translates into bigger career dreams. Boys start out at a higher level than do girls when it comes to their career aspirations. The number of boys who aspire to glamorous occupations (rock star, sports star) is greater than that of young women at every stage of adolescence, creating a kind of "glamour gap." Further, boys are slightly more likely than are girls to believe their own career dreams will come true.

Finding it difficult to dream and constrained by gender rules, girls start out with lower hopes for their careers, and are already less confident in their talents and abilities. Girls are much more likely than boys to say they are "not smart enough" or "not good enough" for their dream careers.

There are important interactions between race and trends in self-esteem. Black girls in elementary school express high levels of self-esteem and they retain it through high school. While family and community reinforcement sustain high levels of personal importance for black girls, these girls feel strong pressure from the school system and drop significantly in positive feelings about their teachers and their school work.

Hispanic girls are much less confident and positive than black girls and go through a crisis in some ways even more dramatic than the profound shift in white girls' self-perceptions. While Hispanic girls start with significantly higher levels of self-esteem and end up somewhat higher levels, they plummet in terms of confidence in ap-

pearance, family relationships, school, talents, and importance. For example, they drop 38 points in personal self-esteem, farther than any other group of girls.

Girls Self-esteem
By Race and Grade
"Happy the Way I Am"
% Always True

	Elem	Middle	H.S.	Change	All
White Girls	55	29	22	-33	34
Black Girls	65	59	58	-7	60
Hispanic Girls	68	54	30	-38	52

3. Family and school, not peers, have the greatest impacts on adolescents' self-esteem and aspirations.

Popular literature suggests that peers dominate the world of teenagers. In fact, the survey finds several other factors, especially adults and the adult institutions of family and school, have a greater impact on adolescents' self-esteem and aspirations.

A factor analysis probe of self-esteem shows that feelings of acceptance by peers ranks well below academic confidence and feelings of importance within the family as dimensions of adolescent self image.[1]

Pride in schoolwork and feelings of being good at things decline rapidly during adolescence. In elementary school, about half of the students always feel "proud of the work I do." By high school, only one in six students still feels that way.

Although the overall structure of self-esteem is similar for girls and boys, small differences provide important insights. For young men, the sense of confidence in their ability to do things correlates more strongly with general self-esteem than with other aspects of academic confidence. As they find people believing males can do things, boys end up with higher self-esteem as they go through adolescence. The research,

[1]Factor analysis is a statistical technique which looks at the underlying dimensions in attitudes across a number of questions, and at the relationships and relative importance of those dimensions.

particularly the focus groups, shows that young women find people, including their teachers, believing that females cannot do the things they believe they can. The result is girls' lower self-esteem.

For young women, feelings about academic performance correlate strongly with relationships with teachers. Teachers are important role models for young women. Nearly three out of four elementary school girls and over half of high school girls want to be teachers. Far fewer adolescent boys, at any grade, want to be teachers.

Thus, teachers have a special opportunity to affect the self-esteem of their female students, and, by instilling confidence, to shape their interests and aspirations.

For elementary school girls, in fact, academic self-esteem is the most important aspect of self-esteem; yet, it is for them already a negative force. Less than half the girls in elementary school (49 percent) say they feel pride in their schoolwork and percentage drops 32 points to 12 percent in high school. (The percentage of boys who are proud of their schoolwork also drops between elementary and high school, from 53 percent to 16 percent — but, academic pride plays a much smaller role in the structure of boys' self-esteem.)

4. How students come to regard math and science differs by gender.

One of the most dramatic and easily measured effects of schools and teachers on their adolescent students is in the teaching of math and science. The survey finds a strong relationship between math and science and adolescent self-esteem. Math and science have the strongest relationship on self-esteem for young women, and as they "learn" that they are not good at these topics their sense of self-worth and aspirations for themselves deteriorate.

As **Graphs E and F** show, an overwhelming majority of young people like math and science. Most elementary school students also have confidence in their ability to do math, though levels are higher for boys than for girls. All students' enthusiasm for math and science is greatest in the elementary years, and drops precipitously as they get older. The following graph shows the most dramatic losses are among women.

- 81 percent of elementary school girls like math. By high school, 61 percent say they like math.
- 84 percent of elementary school boys like math. Their enjoyment drops less than girls' — to 72 percent — by high school.
- Pluralities of elementary school girls (24 percent) and boys (32 percent) name math as their favorite subject. By high school, these pluralities decline to 12 percent and 23 percent.
- Conversely, the percentage of girls who name math as their least favorite subject jumps from 15 percent in elementary school to 28 percent in high school. The percentage of boys who like math least jumps from 9 percent to 21 percent.

Although overwhelming numbers of adolescents "like" math, significantly fewer believe they are "good at math." As **Graphs G and H** show, adolescents' confidence in their ability declines as they get older and helps erode their enjoyment of math. Adolescent boys, at all grade levels, are much more confident than young girls about their abilities in math. Half of all elementary school boys, but only one-third of all elementary school girls, say they are good at math. By high school, one in four males, but only one in seven females, still say they are good at math.

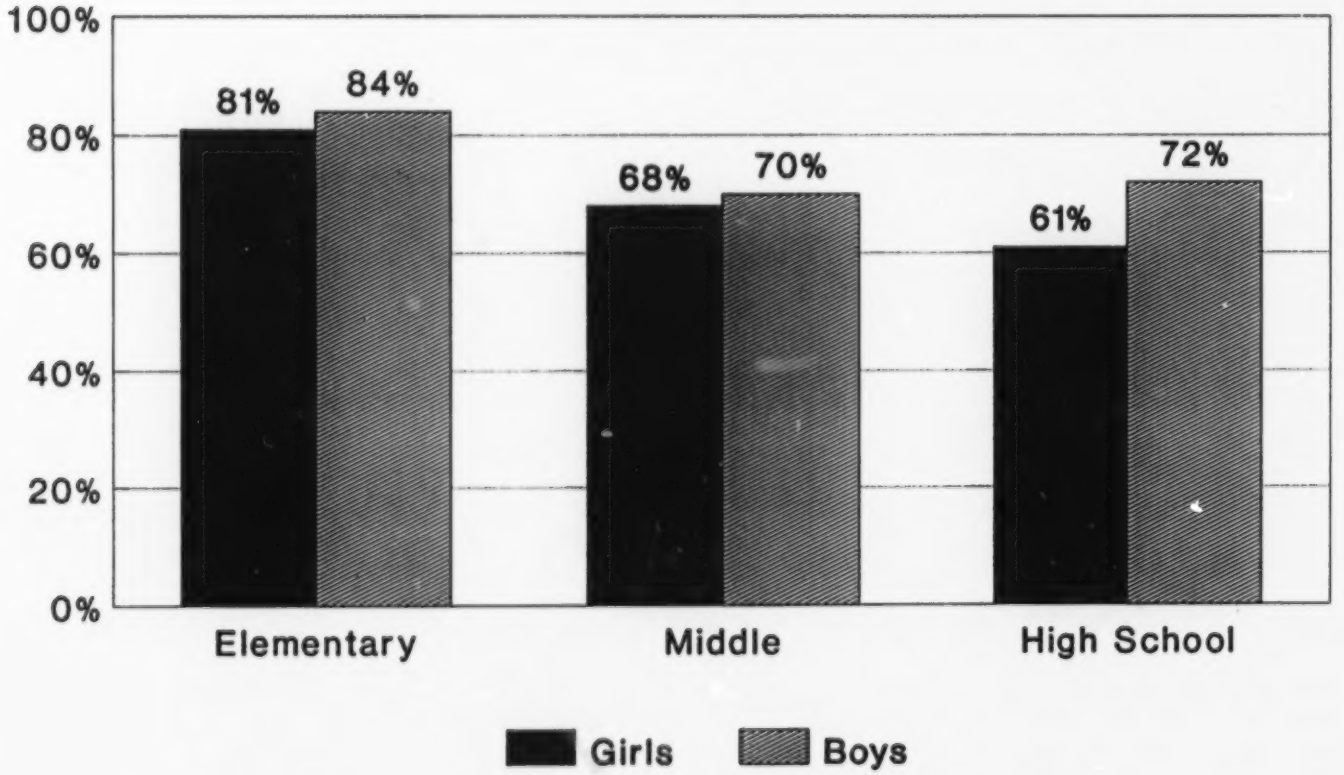
Adolescent women and men interpret their problems with math differently. Large percentages of both girls and boys who dislike math do so because they get bad grades or consider it too hard. As girls get older, the percentage who dislike math because it is "too hard" drops and the percentage who dislike math because they get "bad grades" increases. As the boys get older, they come to believe that they do not like math because the subject itself is "not useful. Girls interpret their problems with math as personal failures. Boys project it more as a problem with the subject matter itself.

Interest in science shows similar patterns.

- The number of girls who like science drops from 75 percent in elementary school to 63 percent in high school.
- 82 percent of boys like science in elementary school. Seventy-five percent of boys still like science in high school.

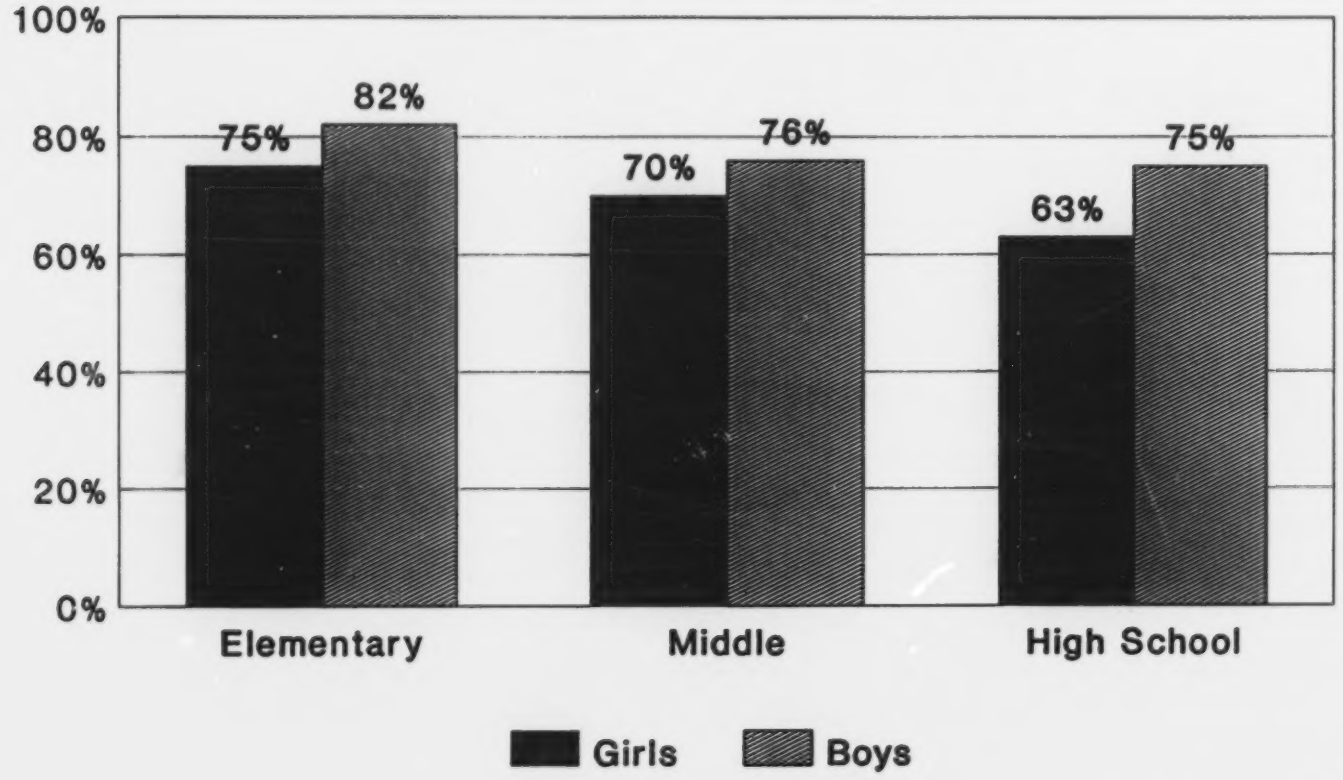
While most students who dislike math do so because they consider it "too hard," most students who dislike science say science is "not interesting." However, as girls grow older, we see a similar patter as we did with math. Adolescent girls are more likely than adolescent boys to find science uninteresting. Adolescent boys are more likely than girls to discount the importance of science itself.

Like Math
By Grade and Gender



Graph E

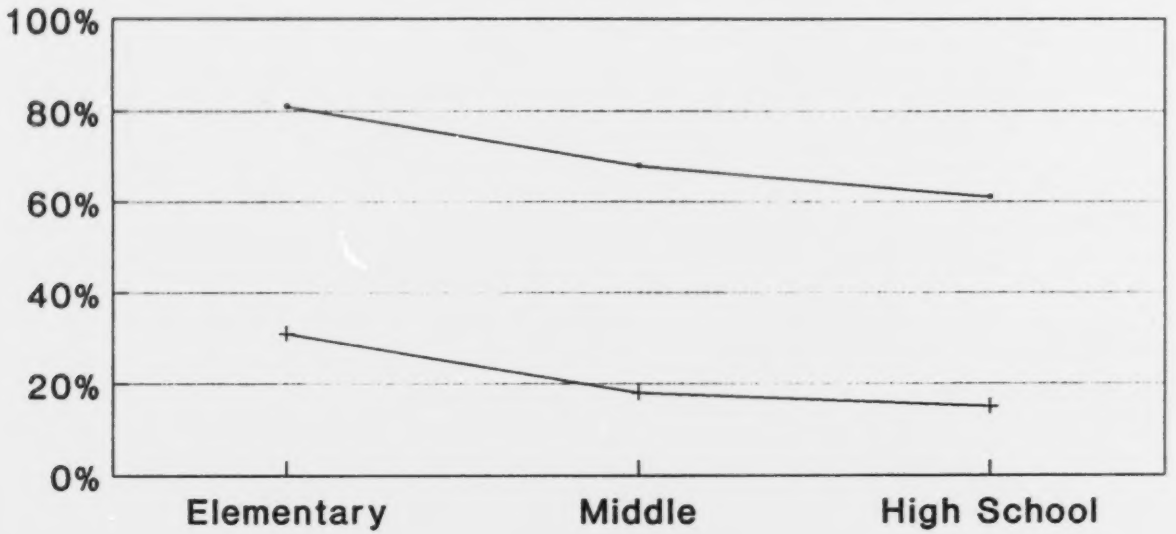
Like Science
By Grade and Gender



Graph F

Girls and Math

Like Math vs. Good at Math

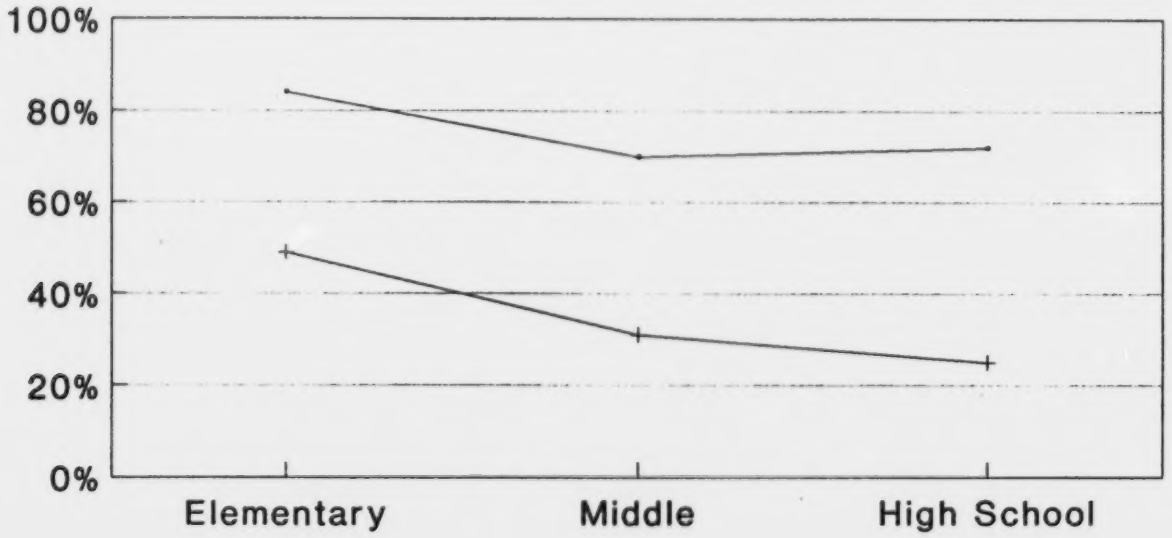


	Elementary	Middle	High School
Like Math	81%	68%	61%
Good at Math	31%	18%	15%

Graph G

Boys and Math

Like Math vs. Good at Math

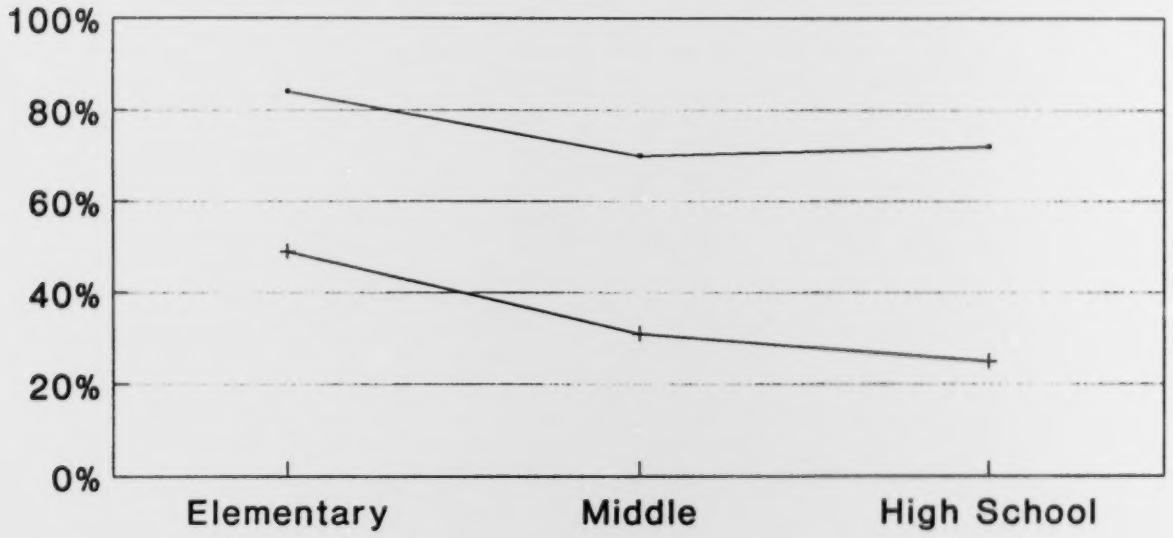


	Elementary	Middle	High School
Like Math	84%	70%	72%
Good at Math	49%	31%	25%

Graph H

Boys and Math

Like Math vs. Good at Math



	Elementary	Middle	High School
Like Math	84%	70%	72%
Good at Math	49%	31%	25%

Graph H

5. There is a circular relationship between liking math and science, self-esteem, and career interests.

The school system provides the most important place to make a positive impact on the self-esteem of adolescents, as well as on their career preferences. The relationships between math and science, self-esteem, and career preferences provide an important example of the kind of difference schools can make. Because of the differences in the ways adolescent women and men think about math and science, the influence of teachers on young women and their self-esteem and careers is particularly strong.

Adolescents who like math and science are more likely to prefer careers in occupations they believe make use of these subjects. By small margins, students who like math and science express stronger desires for careers as teachers, doctors, and scientists.

Even more important, students who like math and science are more likely to aspire to careers as professionals. On an open-ended measure of career preference ("What do you really want to be when you grow up?"), students who like math and science are more likely to name professional occupations as their first career choice. The impact is stronger for young women than for young men.

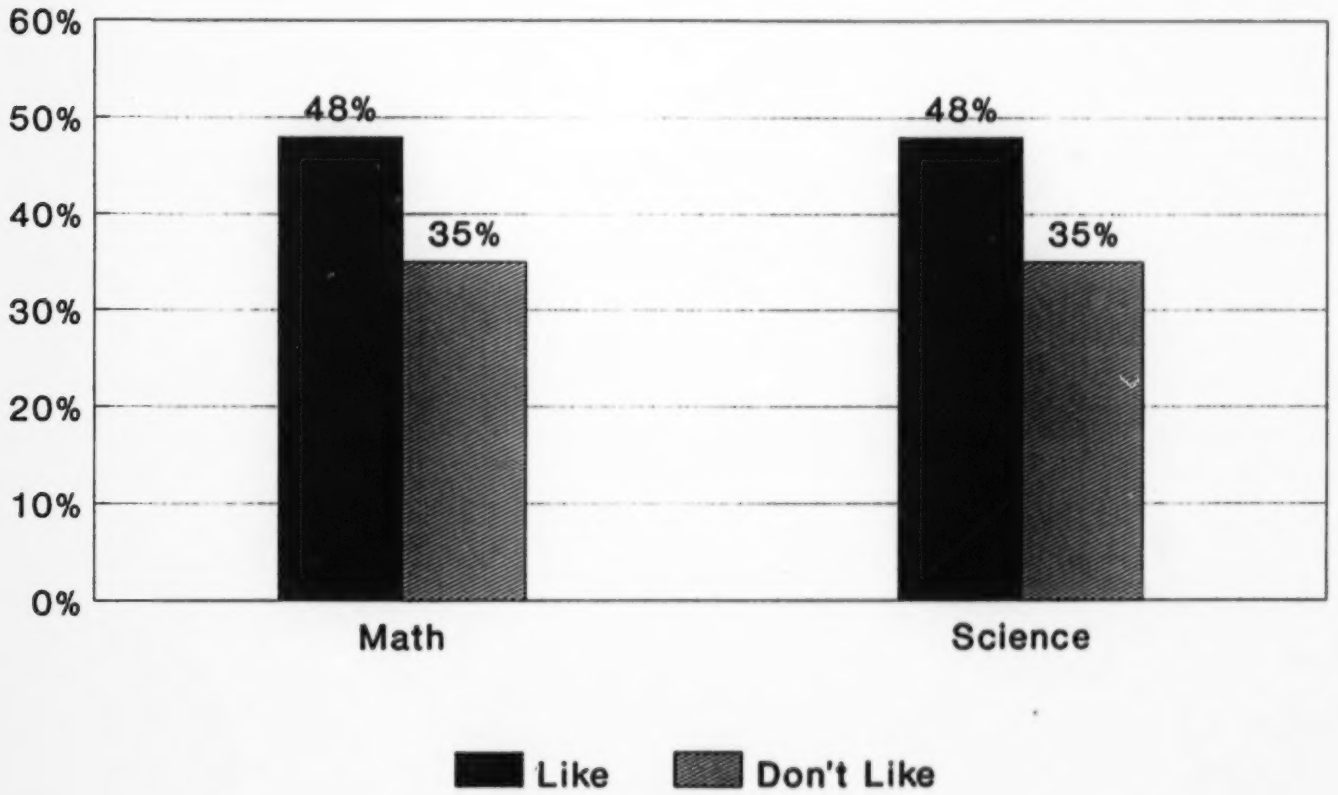
Enjoyment of math and science is also related to career choice in a more indirect way. As **Graph I** shows, there is a circular relationship between enjoyment of these subjects and self-esteem. Students who like math possess significantly greater self-esteem — Students with higher self-esteem like math and science more. These students like themselves more, feel better about their school work and grades, consider themselves more important, and feel better about their family relationships.

The differences by gender are important. Dramatically, adolescent women who like math are more confident about their appearance than are all adolescent men, whether or not they like math (and than adolescent women who do not like math). And young women who like math and science worry less about others liking them.

This greater sense of self confidence has a measurable effect on confidence about career choices for both young men and women. Young women and young men who like math hold onto their career dreams more stubbornly and are less likely to believe they will "probably end up being something different from what you sometimes want to be."

Finally, all adolescents see large differences between the sexes, and these differences increase the tensions and contradictions for young women as they get older. Gender stereotypes are still a major force in shaping the career expectations of young people. Young women are much more likely than young men to want to be homemakers (+32 percent), teachers (+33 percent), and nurses (+35 percent). Adolescent men are much more likely to want to be sports stars (+42 percent), construction workers (+18

Math/Science and Self-Esteem
Percent "Happy the Way I Am"



Graph I

percent), and scientists (+21 percent). The workforce in the year 2000 will require many more scientists, engineers, and mathematicians. However, by high school, 52 percent of boys think they would enjoy being a scientist, but only 29 percent of girls.

Still, the survey also reflects the dramatic societal changes in the last two decades. Most young people assume that women will combine a job outside the home with their job inside the home. Even more girls than boys think they could enter certain professions, most noticeably, the law. These changes in gender perception, and broad potential for even greater changes with a better understanding of the reciprocal relationships between schools and young women students, are among the brightest findings of the survey. These results present a critical challenge to schools as we face the social and economic realities of the next century.

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